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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Mariachiara Bossi

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EXAMINER

KAO, JUTAI

ART UNIT

PAPER NUMBER

2616

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/538,833	Applicant(s) BOSSI ET AL.	
	Examiner JUTAI KAO	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 16, 21, 23-25 and 29 is/are rejected.
- 7) ☒ Claim(s) 17-20, 22, 26-28 and 30 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 June 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/13/2005, 08/15/2005</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the calculation of the probability function and the complexity function and the steps of the test routine must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to because the lack of description of numbered elements in Fig. 1 and 2. Boxes in the drawing showing steps of a flowchart (such as item 4-10 in Fig. 1) need to be accompanied by descriptive texts. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim23 and 24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 23 and 24 are directed to a computer program, which is non-statutory. It is suggested for the applicants to either cancel the claims or amend the claims such that the claims are directed to computer readable medium encoded computer programs, which when executed, performs the desired functions.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 16, 21, 25 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klinecicz (US 2004/0095887) in view of Chaffee (US 2002/0186665) and Kumaran (US 2002/0097716).

Regarding claim 16, a method of designing a transport network for routing a plurality of routable flows, having a plurality of network elements (see nodes in Fig. 3) and a plurality of connections between said network elements (see connections in Fig. 3), the method comprising: defining a first network configuration (see initial topology shown in item 415 in Fig. 4) and at least one alternative network configuration (see "eliminating and/or adding any given link" recited in paragraph [0025], that is, a modified version of the initial topology being the alternative topology); comparing the complexity functions of said first and any alternative network configurations, for choosing a network configuration having a lowest complexity value (see "drops disadvantageous links...calculating the savings (in terms of cost...) obtained...link with the greatest positive savings..." recited in paragraph [0047]; or see "reduce a cost of the network" recited in paragraph [0025]; that is, the invention teaches selecting configuration of the lowest cost, wherein cost represents the claimed complexity function/value).

Regarding claim 25, a device (see network design module 140 in Fig. 1) for designing a transport network for routing a plurality of routable flows, having a plurality of network elements (see nodes in Fig. 3) and a plurality of connections between said network elements (see connections in Fig. 3), the method comprising: a network configuration unit (see network design module 140 in Fig. 1) for defining a first network configuration (see initial topology shown in item 415 in Fig. 4) and at least one

alternative network configuration (see “eliminating and/or adding any given link” recited in paragraph [0025], that is, a modified version of the initial topology being the alternative topology); a complexity evaluation unit (see network design module 140 in Fig. 1) for comparing the complexity functions of said first and any alternative network configurations, for choosing a network configuration having a lowest complexity value (see “drops disadvantageous links...calculating the savings (in terms of cost...) obtained...link with the greatest positive savings...” recited in paragraph [0047]; or see “reduce a cost of the network” recited in paragraph [0025]; that is, the invention teaches selecting configuration of the lowest cost, wherein cost represents the claimed complexity function/value).

Regarding claim 21 and 29, wherein said step of comparing the complexity functions is performed calculating said complexity function for each network configuration considered (see comparison step 430 in Fig. 4 and corresponding texts in the specification, where the system decide between the alternative network and the current network using the cost function) in correspondence of an estimated maximum number of routable flows in said transport network (Chaffee and Kumaran below disclose how the cost function is calculated using a probability function that takes into account of an estimated maximum number of routable flows).

Klincewicz does not disclose the following features: regarding claim 16 and 25, calculating for each of said first and any alternative network configuration, a probability function representing, for each maximum number of routable flows, the probability of routing such a number of flows in the network configuration currently considered; and

calculating for each of said first and any alternative network configuration, a complexity function calculated as the ratio between a sum of complexity factors relative to the network elements of the network configuration currently considered and said probability function.

Chaffee discloses a method of efficient path learning in network including the following features.

Regarding claim 16 and 25, calculating for each of said first and any alternative network configuration, a probability function representing the probability of routing such a number of flows in the network configuration currently considered (see " P_{jk} " recited in paragraph [0052], which represents the probability that a transmit-acknowledge cycle will be successfully completed; that is, a probability of successfully routing a flow); and calculating for each of said first and any alternative network configuration, a complexity function (see " C_{jk} " recited in paragraph [0055], which represents the communication cost factor of the network cost; that is, this value could be used as the cost parameter of Klineciewicz's invention) calculated as the ratio between a sum of complexity factors relative to the network elements of the network configuration currently considered (see " c_j ", which is the sum of " $c_j(M)$ " and " $c_k(A)$ " as shown in paragraph [0050]) and said probability function (see C_{jk} being equal to the ratio of c_{jk} and P_{jk}).

Kumaran discloses a method for processing of regulated connection in a communication network including the following features.

Regarding claim 16 and 25, calculating for each of said first and any alternative network configuration, a probability function representing, for each maximum number of

routable flows, the probability of routing such a number of flows in the network configuration currently considered (see “L denotes the packet loss probability”, which is calculated for “N denotes the maximum number of supportable connections”, recited in claim 9; that is, L represents a probability function of transmission success that takes into account of the maximum number of routable flow).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Klinecicz using features, as taught by Chaffee and Kumaran, in order to provide good representation of the cost function.

Allowable Subject Matter

7. Claims 17-20, 22, 26-28 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Cardwell (US 2002/0036988) discloses a system for designing and selecting a network having the lowest cost by placing lowest cost rings.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUTAI KAO whose telephone number is (571)272-9719. The examiner can normally be reached on Monday ~Friday 7:30 AM ~5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on (571)272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ju-Tai Kao

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